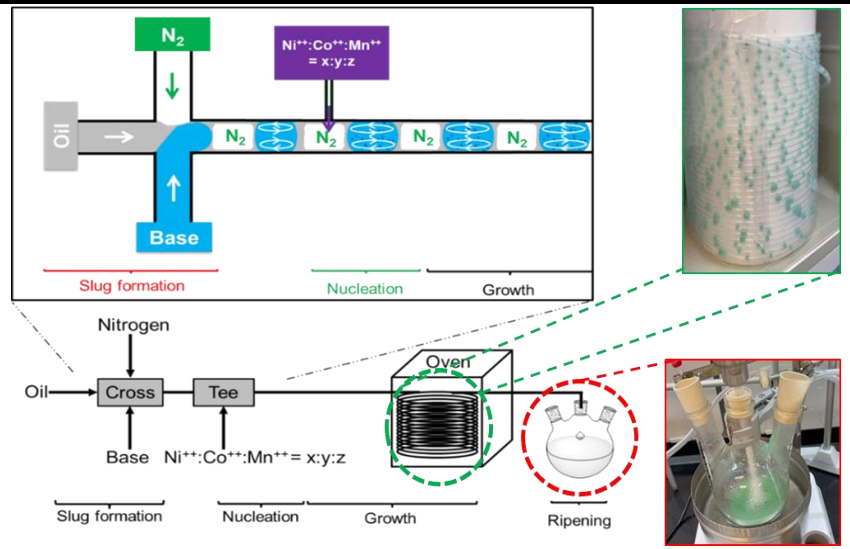
Advanced Slug-flow Manufacturing of Uniform and Tunable Battery Cathode Particles (Project ID: bat564)

Ram B. Gupta[1*], Mo Jiang[1], Mingyao Mou[1], Arjun Patel[1], Jethrine H. Mugumya[1], Sourav Mallick[1], Michael L. Rasche [1], Herman Lopez[2], M P Paranthaman[3]

Goal of the Project

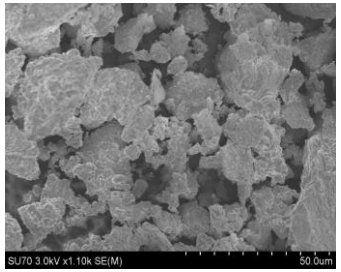
- Develop slug-flow as a platform for controlled synthesis of uniform NCM (nickel-cobalt-manganese oxide) microparticles with controlled composition
- Tune lithium-ion battery (LIB) performance via NCM microparticle properties

Advanced Slug-flow Synthesis Platform

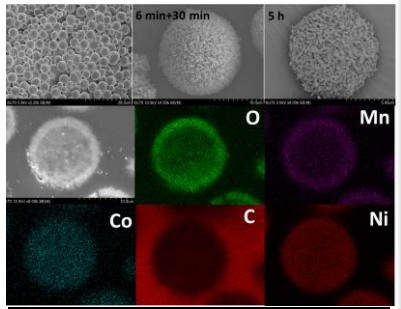


NCM811 precursors

NCM811-hydroxide



NCM811-oxalate

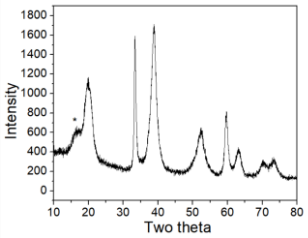


Spherical NCM811-oxalate with uniform particle size

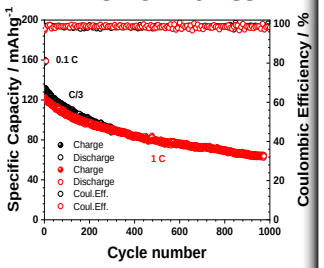
LIB performance of NCM811

Lithiated NCM-hydroxide

XRD

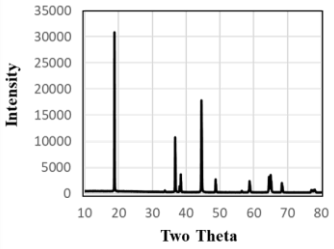


Performance

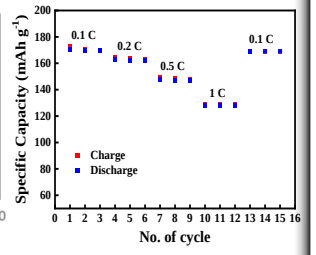


Lithiated NCM-oxalate

XRD



Performance



Summary

- Slug-flow platform is successfully utilized to synthesize NCM811-precursor particles
- High performance LIB is fabricated

Future work

Synthesis of low cobalt NCM with surface coatings to improve cycling stability of LIB

Reference

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PI: Ram B. Gupta (Virginia Commonwealth University[1])
Co-PIs: Mo Jiang (VCU[1]), M. P. Paranthaman (ORNL[3]), Herman Lopez (Zenlabs[2])

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